

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 February 2002 (28.02.2002)

PCT

(10) International Publication Number
WO 02/16485 A3

(51) International Patent Classification⁷: C08J 7/04, B32B
27/36, 15/08, B65D 65/40, 85/72, 75/26

(21) International Application Number: PCT/US01/26406

(22) International Filing Date: 22 August 2001 (22.08.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/645,721 24 August 2000 (24.08.2000) US

(71) Applicant: THE COCA-COLA COMPANY [US/US];
One Coca-Cola Plaza, NW, Atlanta, GA 30313 (US).

(72) Inventors: RULE, Mark: 2003 Royal Court, Atlanta, GA
30341 (US). SHI, Yu: 2911 Bridle Creek Drive, Conyers,
GA 30084 (US). EHRICH, Horst: Buchenhofe 71, 46268
Dorsten (DE).

(74) Agents: PAPPAS, Peter, G. et al.: Sutherland Asbill
& Brennan LLP, 999 Peachtree Street, NE, Atlanta, GA
30309-3996 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA,
ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
TG).

Published:

— with international search report

(88) Date of publication of the international search report:
6 June 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/16485 A3

(54) Title: MULTILAYER POLYMERIC STRUCTURE FOR ENHANCED GAS AND UV BARRIER

(57) Abstract: The coated multilayer structure comprising a polymeric base layer, a zero valent material barrier layer, and a top coat on the zero valent material barrier layer, the top coat comprising a soluble compound capable of reducing the permeability of the multilayer structure to gas or vapor. The zero valent material barrier layer can also enhance barrier to UV light. A method for enhancing the gas or vapor barrier properties or the UV light barrier properties of a multilayer polymeric/inorganic structure is also disclosed. According to one embodiment, Si coated polyethylene terephthalate containers are coated with a gas or vapor barrier enhancing top coat. A method for recycling containers coated with a zero valent material barrier layer is also disclosed.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/26406

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08J7/04 B32B27/36 B32B15/08 B65D65/40 B65D85/72
B65D75/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08J B32B B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 507 351 A (FUJI PHOTO FILM CO LTD) 7 October 1992 (1992-10-07)	1-4, 6-13, 16, 17, 20, 22, 27, 29, 31, 33-36, 43-46, 48, 49, 54, 55, 62, 64, 65
Y	claims 1, 4 page 2, line 14 - line 16 page 4, line 52 - line 58 page 5, line 39 - line 50 ---	8-11, 14, 15, 68
	--- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

1 March 2002

Date of mailing of the international search report

15/03/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Hillebrand, G

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/26406

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 302 813 A (SCHMOOCK HELMUTH) 8 February 1989 (1989-02-08) claim 1 ---	68
Y	EP 0 721 977 A (ABBEY RES & DEV LTD) 17 July 1996 (1996-07-17) claim 1 ---	8-11,14, 15
X	US 4 661 395 A (AKAO MUTSUO) 28 April 1987 (1987-04-28) claims 1-4 ---	1-4,6, 27,29,31
X	US 4 857 401 A (SIEVERDING DAVID L) 15 August 1989 (1989-08-15) claims 1,3,4 ---	1-4,6, 27,29,31
X	US 4 749 625 A (OBAYASHI TSUTOMU ET AL) 7 June 1988 (1988-06-07) claim 1 ---	27
A	EP 0 468 864 A (VENTHENAT PAPETERIES DES CHARE) 29 January 1992 (1992-01-29) claim 1 ---	1
A	DATABASE WPI Section Ch, Week 200057 Derwent Publications Ltd., London, GB; Class A23, AN 2000-596671 XP002191623 & JP 2000 212302 A (TORAY IND INC), 2 August 2000 (2000-08-02) abstract ---	27,31,32
A	EP 0 376 614 A (POLYPLASTICS CO) 4 July 1990 (1990-07-04) claim 1 ---	27,31,32
A	US 5 298 149 A (KAWAMURA HIROAKI ET AL) 29 March 1994 (1994-03-29) claim 1 -----	27,31,32

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: al Application No

PCT/US 01/26406

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0507351	A	07-10-1992	JP 2049122 C 25-04-1996
			JP 6013202 B 23-02-1994
			JP 63182145 A 27-07-1988
			JP 2025264 C 26-02-1996
			JP 6013200 B 23-02-1994
			JP 63183839 A 29-07-1988
			EP 0507351 A2 07-10-1992
			EP 0508489 A2 14-10-1992
			DE 3856333 D1 17-06-1999
			DE 3856333 T2 09-09-1999
			DE 3856411 D1 21-06-2000
			DE 3856411 T2 14-09-2000
			DE 3889230 D1 01-06-1994
			DE 3889230 T2 11-08-1994
			EP 0276018 A2 27-07-1988
			US 4906517 A 06-03-1990
			US 5110643 A 05-05-1992
EP 0302813	A	08-02-1989	DE 3715640 A1 24-11-1988
			AT 126104 T 15-08-1995
			DE 3854289 D1 14-09-1995
			EP 0302813 A2 08-02-1989
EP 0721977	A	17-07-1996	GB 2296714 A 10-07-1996
			EP 0721977 A1 17-07-1996
			US 5614268 A 25-03-1997
US 4661395	A	28-04-1987	NONE
US 4857401	A	15-08-1989	NONE
US 4749625	A	07-06-1988	JP 1906295 C 24-02-1995
			JP 6022994 B 30-03-1994
			JP 62227739 A 06-10-1987
			JP 1687114 C 11-08-1992
			JP 3049646 B 30-07-1991
			JP 62275519 A 30-11-1987
			JP 1621361 C 09-10-1991
			JP 2043360 B 28-09-1990
			JP 63004699 A 09-01-1988
			JP 1683887 C 31-07-1992
			JP 3042715 B 28-06-1991
			JP 63035207 A 15-02-1988
			JP 1920173 C 07-04-1995
			JP 6032423 B 27-04-1994
			JP 63082000 A 12-04-1988
			JP 1941264 C 23-06-1995
			JP 6032424 B 27-04-1994
			JP 63107197 A 12-05-1988
			AU 587318 B2 10-08-1989
			AU 7073187 A 05-11-1987
			CA 1328581 A1 19-04-1994
			DE 3710322 A1 15-10-1987
			DE 3744996 C2 13-02-1997
			FR 2602716 A1 19-02-1988
			GB 2189740 A ,B 04-11-1987
			JP 1105734 A 24-04-1989
			JP 1914004 C 23-03-1995

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. Application No

PCT/US 01/26406

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4749625	A		JP 6037103 B	18-05-1994
EP 0468864	A	29-01-1992	FR 2665144 A1	31-01-1992
			AT 128072 T	15-10-1995
			DE 69113160 D1	26-10-1995
			DE 69113160 T2	30-05-1996
			EP 0468864 A1	29-01-1992
			ES 2080271 T3	01-02-1996
JP 2000212302	A	02-08-2000	NONE	
EP 0376614	A	04-07-1990	JP 2180185 A	13-07-1990
			BR 8906542 A	18-09-1990
			CA 2005197 A1	28-06-1990
			EP 0376614 A1	04-07-1990
			KR 9305885 B1	25-06-1993
US 5298149	A	29-03-1994	US 5213903 A	25-05-1993